



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/528,108	03/16/2005	Tadayoshi Ito	038440-0119	9116

22428 7590 12/12/2007
FOLEY AND LARDNER LLP
SUITE 500
3000 K STREET NW
WASHINGTON, DC 20007

EXAMINER

HERRERA, DIEGO D

ART UNIT	PAPER NUMBER
----------	--------------

2617

MAIL DATE	DELIVERY MODE
-----------	---------------

12/12/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/528,108

Applicant(s)

ITO ET AL.

Examiner

Diego Herrera

Art Unit

2617

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 16 March 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-18 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 16 March 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 101

35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claims 13-18 are rejected under 35 USC 101 because the claimed invention is directed to non-statutory subject matter. The preamble for a computer readable medium and executable program are not statutory.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of

the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Doi (US publication 20020039886), and in view of Ishida (US publication 20010019952).

Regarding claims 1 and 11. Doi discloses a radio cell station apparatus to which a plurality of personal stations can establish space division multiple access (fig. 8, paragraph [0003], [0026], [0080], [0089], Doi teaches establishing from a mobile device to a radio cell station to a TDMA/TDD frame and simultaneously provision), said radio cell station apparatus transmitting to and receiving from each of said plurality of personal stations a signal including an already-known reference signal different for each personal station (paragraph [0032], [0058], Doi teaches a reference signal which is a basis for forming the antenna directivity), comprising:

multiplexed connection number detection means for detecting number of multiplexed connections of the personal stations establishing space division multiple access (paragraph [0032], [0085], [0089], Doi teaches the radio base station path division multiplexes a maximum of four signals on the same frequency in addition to TDMA/TDD); and

However, Doi does not disclose specifically reference signal allocation means for

allocating, by switching the reference signals that have been allocated to the personal stations establishing space division multiple access respectively prior to change in the number of multiplexed connections to reference signals capable of maintaining communication quality even after the number of multiplexed connections is changed, the switched reference signals to said plurality of personal stations respectively, when change in the number of multiplexed connections is detected in said multiplexed connection number detection means, nevertheless, Ishida teaches reference signal allocation means (fig. 4, paragraph [0078], [0087], [0092]-[0093], Ishida teaches allocation channel assignment notification contains the associated UW and notifies that the link channel has been assigned to the mobile station).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to specifically include reference signal allocation means for allocating, by switching the reference signals that have been allocated to the personal stations establishing space division multiple access respectively prior to change in the number of multiplexed connections to reference signals capable of maintaining communication quality even after the number of multiplexed connections is changed, the switched reference signals to said plurality of personal stations respectively, when change in the number of multiplexed connections is detected in said multiplexed connection number detection means as taught by Ishida for the purposes of controlling unit updates and to transmit a channel assignment notification that specifies time slot and frequency and assigned channel.

Consider claims 4, 7 and 10. Doi discloses a personal station establishing space division multiple access to a radio cell station apparatus (paragraph [0025], Doi teaches the disclosure that of a radio communication system and mobile devices), said personal station transmitting to and receiving from said radio cell station apparatus a signal including an already-known reference signal different for each personal station (paragraph [0026], Doi teaches the mobile device communicating with radio base station), comprising:

means for receiving a request for switching a reference signal from said radio cell station apparatus in accordance with change in the number of multiplexed connections of the personal stations establishing space division multiple access (abstract, paragraph [0029], [0058], [0066], [0093], and [0094], Doi teaches reference signal being received by antenna of base station and establishing division multiple access); and

However, Doi does not disclose specifically reference signal allocation means for allocating, by switching the reference signals that have been allocated to the personal stations establishing space division multiple access respectively prior to change in the number of multiplexed connections to reference signals capable of maintaining communication quality even after the number of multiplexed connections is changed, the switched reference signals to said plurality of personal stations respectively, when change in the number of multiplexed connections is detected in said multiplexed connection number detection means, nevertheless, Ishida teaches reference signal allocation means (fig. 4, paragraph [0078], [0087], [0092]-[0093], Ishida teaches

allocation channel assignment notification contains the associated UW and notifies that the link channel has been assigned to the mobile station).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to specifically include reference signal allocation means for allocating, by switching the reference signals that have been allocated to the personal stations establishing space division multiple access respectively prior to change in the number of multiplexed connections to reference signals capable of maintaining communication quality even after the number of multiplexed connections is changed, the switched reference signals to said plurality of personal stations respectively, when change in the number of multiplexed connections is detected in said multiplexed connection number detection means as taught by Ishida for the purposes of controlling unit updates and to transmit a channel assignment notification that specifies time slot and frequency and assigned channel.

Consider claim 2. The radio cell station apparatus according to claim 1, Doi discloses further comprising storage means for storing a reference signal optimized for each number of multiplexed connections of the personal stations establishing space division multiple access (paragraph [0025]-[0027], Doi teaches communication between base station and mobile device or apparatus), wherein when the number of multiplexed connections of the personal stations establishing space division multiple access is changed, said reference signal allocation means selects reference signals optimal for the changed number of multiplexed connections from said

storage means and allocates the selected reference signals to said plurality of personal stations respectively (paragraph [0025]-[0028], and [0032], Doi teaches radio information calculating data for controlling antenna directivity and reception unit forming and using calculating data).

Consider claim 3. The radio cell station apparatus according to claim 2, Doi discloses wherein said reference signal stored in said storage means is calculated for each number of multiplexed connections based on a high autocorrelation characteristic and a low cross-correlation characteristic (paragraph [0056], [0058], Doi teaches the storing reference signal).

Consider claim 5. The personal station according to claim 4, further comprising storage means for storing a reference signal optimized (paragraph [0056], [0058], Doi teaches the storing reference signal) for each number of multiplexed connections of the personal stations establishing space division multiple access (paragraph [0025]-[0027], Doi teaches communication between base station and mobile device or apparatus), wherein when the request for switching the reference signal is received from said radio cell station apparatus, a reference signal optimal for the changed number of multiplexed connections is selected from said storage means and a response to the request for switching including the selected reference signal is transmitted to said radio cell station apparatus (fig. 4, paragraph [0078], [0087], [0092]-[0093], Ishida teaches allocation channel assignment notification contains the associated UW and notifies that the link

channel has been assigned to the mobile station).

Consider claim 6. The personal station according to claim 5, wherein said reference signal stored in said storage means is calculated for each number of multiplexed connections based on a high autocorrelation characteristic and a low cross-correlation characteristic (paragraph [0025]-[0028], and [0032], Doi teaches radio information calculating data for controlling antenna directivity and reception unit forming and using calculating data).

Consider claim 8. The method of controlling a reference signal according to claim 7, further comprising the step of storing a reference signal optimized for each number of multiplexed connections of the personal stations establishing space division multiple access (paragraph [0032], [0085], [0089], Doi teaches the radio base station path division multiplexes a maximum of four signals on the same frequency in addition to TDMA/TDD), wherein when the number of multiplexed connections of the personal stations establishing space division multiple access is changed, reference signals optimal for the changed number of multiplexed connections that have been stored are selected and the selected reference signals are allocated to said plurality of personal stations respectively (paragraph [0025]-[0028], and [0032], Doi teaches radio information calculating data for controlling antenna directivity and reception unit forming and using calculating data).

Art Unit: 2617

Consider claims 9 and 12. The method of controlling a reference signal according to claims 8 and 11, wherein the step of storing a reference signal optimized (paragraph [0056], [0058], Doi teaches the storing reference signal) for each number of multiplexed connections of the personal stations establishing space division multiple access further includes the step of calculating a reference signal for each number of multiplexed connections based on a high autocorrelation characteristic and a low cross-correlation characteristic (paragraph [0032], [0085], [0089], Doi teaches the radio base station path division multiplexes a maximum of four signals on the same frequency in addition to TDMA/TDD).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Diego Herrera whose telephone number is (571) 272-0907. The examiner can normally be reached on Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Lester Kincaid can be reached on (571) 272-7922. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 2617

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Diego Herrera
Patent Examiner


LESTER G. KINCAID
SUPERVISORY PRIMARY EXAMINER